

WHAT IS CLAIMED IS:

1. A system for electrophotographic printing, which comprises:

a photoconductive roller for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media;

a photostatic charging device for applying the photostatic charge to the photoconductive roller;

a laser for activating selected portions of the charge applied to the photoconductive roller, such portions being in the form of the image;

a development roller for transferring toner to the photoconductive roller, the toner photostatically adhering to the photoconductive roller in the form of the image;

a transfer roller in contact with the photoconductive roller at a selected transfer point for transferring the toner image from the photoconductive roller to the first surface of the printing media, the transfer roller having at least one groove in proximity to each roller end for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the photoconductive roller;

a power source for applying a selected voltage to the transfer roller and attracting the toner thereto so as to effect transfer of the toner image from the photoconductive roller to the printing media first surface; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.

2. The system set forth in claim 1 wherein the photostatic charging device is a charge roller.

3. The system set forth in claim 1 wherein the photostatic charging device is a corona for spraying the photostatic charge onto the photoconductive roller.

4. A system for electrophotographic printing, which comprises:

a photoconductive roller for collecting a first photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image for printing on a first surface of printing media;

a photostatic charging device for applying the first photostatic charge to the photoconductive roller;

a laser for activating selected portions of the charge collected on the photoconductive roller into the form corresponding to the image;

a development roller for transferring toner to the photoconductive roller, the first photostatic charge attracting the toner and causing the toner to photostatically adhere to the photoconductive roller in the form of the image;

a transfer roller in contact with the photoconductive roller at a selected transfer point, a second surface of the printing media having a second photostatic charge for attracting the toner retained by the photoconductive roller so as to effect transfer of the toner image from the photoconductive roller to the printing media first surface, the transfer roller having at least one groove in proximity to each roller end for

accommodating overhanging edges of printing media as a setback from edges of the printing media and for clearance from toner on the photoconductive roller; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.

5. A system for electrophotographic printing, which comprises:

a photoconductive roller for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media;

a photostatic charging device for applying the photostatic charge to the photoconductive roller;

a laser for activating selected portions of the charge applied to the photoconductive roller, such portions being in the form of the image;

a development roller for transferring toner to the photoconductive roller, the toner photostatically adhering to the photoconductive roller in the form of the image;

a transfer roller in contact with the photoconductive roller at a selected transfer point for transferring the toner image from the photoconductive roller to the first surface of the printing media, the transfer roller having extendable roller ends such that, upon their extension a selected distance, at least one groove is formed in proximity to each roller end for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the photoconductive roller;

a power source for applying a selected voltage to the transfer roller and attracting the toner thereto so as to effect transfer of the toner image from the photoconductive roller to the printing media first surface; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.

6. A system for electrophotographic printing, which comprises:

a photoconductive roller for collecting a first photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image for printing on a first surface of printing media;

a photostatic charging device for applying the first photostatic charge to the photoconductive roller;

a laser for activating selected portions of the charge collected on the photoconductive roller into the form corresponding to the image;

a development roller for transferring toner to the photoconductive roller, the first photostatic charge attracting the toner and causing the toner to photostatically adhere to the photoconductive roller in the form of the image;

a transfer roller in contact with the photoconductive roller at a selected transfer point, a second photostatic charge on the printing media second surface attracting the toner retained by the photoconductive roller so as to effect transfer of the toner image from the photoconductive roller to the printing media first surface, the transfer roller having extendable roller ends such that, upon their extension a selected distance, at least one groove is formed in proximity to each roller end for accommodating overhanging

edges of printing media as a setback from edges of the printing media and for clearance from toner on the photoconductive roller; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.

7. A system for electrophotographic printing, which comprises:

a photoconductive roller for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media;

a photostatic charging device for applying the photostatic charge to the photoconductive roller;

a laser for activating selected portions of the charge applied to the photoconductive roller, such portions being in the form of the image;

a development roller for transferring toner to the photoconductive roller, the toner photostatically adhering to the photoconductive roller in the form of the image;

a plurality of transfer rollers arranged about a rotatable carousel, each roller being rotatably mounted to the carousel, such that at least one of the rollers is positionable for operative engagement with the photoconductive roller at a selected transfer point, such engagement effecting transfer of the toner image from the photoconductive roller to the first surface of the printing media, each roller having an effective length different than that of the other rollers so as to enable overhanging edges of printing media having a selected width, such overhanging edges providing a setback from the paper edges and clearance from toner on the photoconductive roller;

a power source for applying a selected voltage to the transfer roller and attracting the toner thereto so as to effect transfer of the toner image from the photoconductive roller to the printing media first surface; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.

8. A system for electrophotographic printing, which comprises:

a photoconductive roller for collecting a first photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image for printing on a first surface of printing media;

a photostatic charging device for applying the first photostatic charge to the photoconductive roller;

a laser for activating selected portions of the charge collected on the photoconductive roller into the form corresponding to the image;

a development roller for transferring toner to the photoconductive roller, the first photostatic charge attracting the toner and causing the toner to photostatically adhere to the photoconductive roller in the form of the image;

a plurality of transfer rollers arranged about a rotatable carrousel, each roller being rotatably mounted to the carrousel, such that at least one of the rollers is positionable for operative engagement with the photoconductive roller at a selected transfer point, a second surface of the printing media having a second photostatic charge, such engagement effecting transfer of the toner image from the photoconductive roller to the first surface of the printing media, each roller having an effective length

different than that of the other rollers so as to enable overhanging edges of printing media having a selected width, such overhanging edges providing a setback from the paper edges and clearance from toner on the photoconductive roller; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.

9. A system for electrophotographic printing, which comprises:

a photoconductive roller for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media;

a photostatic charging device for applying the photostatic charge to the photoconductive roller;

a laser for activating selected portions of the charge applied to the photoconductive roller, such portions being in the form of the image;

a development roller for transferring toner to the photoconductive roller, the toner photostatically adhering to the photoconductive roller in the form of the image;

a plurality of transfer rollers arranged along a translatable carriage, each roller being rotatably mounted to the carriage, such that upon selected translation of the carriage, at least one of the rollers is positionable for operative engagement with the photoconductive roller at a selected transfer point, such engagement effecting transfer of the toner image from the photoconductive roller to the first surface of the printing media, each roller having an effective length different than that of the other rollers so as to enable overhanging edges of printing media having a selected width, such

overhanging edges providing a setback from the paper edges and clearance from toner on the photoconductive roller;

a power source for applying a selected voltage to the transfer roller and attracting the toner thereto so as to effect transfer of the toner image from the photoconductive roller to the printing media first surface; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.

10. A system for electrophotographic printing, which comprises:

a photoconductive roller for collecting a first photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image for printing on a first surface of printing media;

a photostatic charging device for applying the first photostatic charge to the photoconductive roller;

a laser for activating selected portions of the charge collected on the photoconductive roller into the form corresponding to the image;

a development roller for transferring toner to the photoconductive roller, the first photostatic charge attracting the toner and causing the toner to photostatically adhere to the photoconductive roller in the form of the image;

a plurality of transfer rollers arranged along a translatable carriage, each roller being rotatably mounted to the carriage, such that upon selected translation of the carriage, at least one of the rollers is positionable for operative engagement with the photoconductive roller at a selected transfer point, such engagement effecting transfer

of the toner image from the photoconductive roller to the first surface of the printing media, and each roller having an effective length different than that of the other rollers so as to enable overhanging edges of printing media having a selected width, such overhanging edges providing a setback from the paper edges and clearance from toner on the photoconductive roller; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.

11. A system for printing toner or the like on printing media, which comprises:

a drum for retaining toner;

a transfer roller in contact with the drum at a selected transfer point for transferring a uniform layer of the toner from the drum to a first surface of the printing media, at least one end of the transfer roller being sized and configured for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the drum; and

a power source for applying a selected voltage between the drum and the transfer roller for attracting the toner thereto so as to effect transfer of the uniform toner layer from the drum to the printing media first surface.

12. The system set forth in claim 11 further comprising a development roller for transferring toner to the drum, the toner adhering to the drum in the form of an image desired to be printed.

13. A system for printing toner or the like on printing media, which comprises a development roller for retaining toner in a form of an image desired to be printed; and a transfer roller in contact with the development roller at a selected transfer point for transferring a uniform layer of the toner from the development roller to a first surface of the printing media, the toner adhering to the first surface at the selected transfer point, at least one end of the transfer roller being sized and configured for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the drum.

14. A method for printing an image electrophotographically on printing media, which comprises the steps of:

- i. moving in a first direction a photoconductor for collecting a photostatic charge;
- ii. using a selected voltage from a power source, charging the photoconductor with the photostatic charge;
- iii. activating selected portions of the charge on the photoconductor corresponding to an image to be printed on a first surface of the printing media;
- iv. rotating a development roller adjacent to and in tandem with the photoconductor but in a third direction generally opposite to that of the first;
- v. transferring toner from the development roller to the photoconductor, the toner photostatically adhering to the photoconductor in a form corresponding to the image to be printed;

vi. placing a transfer roller in contact with the photoconductor, the point of contact defining a selected point for transferring toner from the photoconductor to the first surface of the printing media, the transfer roller having at least one groove in proximity to each roller end for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the photoconductor;

vii. transporting the printing media in tandem with and to a point between the photoconductor and the transfer roller; and

viii. attracting toner on the photoconductor toward the transfer roller so as to effect transfer of the toner image from the photoconductor to the printing media first surface.

15. The method set forth in claim 14 wherein the step of charging of the photoconductor is performed using a charge roller.

16. The system set forth in claim 14 wherein the step of charging of the photoconductor is performed using a corona.

17. A method for printing an image electrophotographically on printing media, which comprises the steps of:

i. moving in a first direction a photoconductor for collecting a photostatic charge;

ii. using a selected voltage from a power source, charging the photoconductor with the photostatic charge;

- iii. activating selected portions of the charge on the photoconductor corresponding to an image to be printed on a first surface of the printing media;
- iv. rotating a development roller adjacent to and in tandem with the photoconductor but in a third direction generally opposite to that of the first;
- v. transferring toner from the development roller to the photoconductor, the toner photostatically adhering to the photoconductor in a form corresponding to the image to be printed;
- vi. placing a transfer roller having extendable ends in contact with the photoconductor, the point of contact defining a selected point for transferring toner from the photoconductor to the first surface of the printing media;
- vii. extending the ends of the transfer roller a selected distance such that at least one groove is formed in proximity to each roller end for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the photoconductor;
- viii. transporting the printing media in tandem with and to a point between the photoconductor and the transfer roller; and
- ix. attracting toner on the photoconductor toward the transfer roller so as to effect transfer of the toner image from the photoconductor to the printing media first surface.

18. A method for printing an image electrophotographically on printing media, which comprises the steps of:

- i. moving in a first direction a photoconductor for collecting a photostatic charge;
- ii. using a selected voltage from a power source, charging the photoconductor with the photostatic charge;
- iii. activating selected portions of the charge on the photoconductor corresponding to an image to be printed on a first surface of the printing media;
- iv. rotating a development roller adjacent to and in tandem with the photoconductor but in a third direction generally opposite to that of the first;
- v. transferring toner from the development roller to the photoconductor, the toner photostatically adhering to the photoconductor in a form corresponding to the image to be printed;
- vi. rotating a carrousel having a plurality of transfer rollers arranged thereabout with each roller rotatably mounted thereto so as to position at least one of the rollers in contact with the photoconductor, the point of contact defining a selected point for transferring the toner image from the photoconductor to the first surface of the printing media, each roller having an effective length different than that of the other rollers so as to enable overhanging edges of printing media having a selected width, such overhanging edges providing a setback from the paper edges and clearance from toner on the photoconductor;
- vii. transporting the printing media in tandem with and to a point between the photoconductor and the transfer roller; and

viii. attracting toner on the photoconductor toward the transfer roller so as to effect transfer of the toner image from the photoconductor to the printing media first surface.

19. A method for printing an image electrophotographically on printing media, which comprises the steps of:

- i. moving in a first direction a photoconductor for collecting a photostatic charge;
- ii. using a selected voltage from a power source, charging the photoconductor with the photostatic charge;
- iii. activating selected portions of the charge on the photoconductor corresponding to an image to be printed on a first surface of the printing media;
- iv. rotating a development roller adjacent to and in tandem with the photoconductor but in a third direction generally opposite to that of the first;
- v. transferring toner from the development roller to the photoconductor, the toner photostatically adhering to the photoconductor in a form corresponding to the image to be printed;
- vi. translating a carriage with a plurality of transfer rollers rotatably mounted thereto so as to position at least one of the rollers in contact with the photoconductor, the point of contact defining a selected point for transferring the toner image from the photoconductor to the first surface of the printing media, each roller having an effective length different than that of the other rollers so as to enable overhanging edges of printing media having a selected width, such overhanging edges

providing a setback from the paper edges and clearance from toner on the photoconductor;

vii. transporting the printing media in tandem with and to a point between the photoconductor and the transfer roller; and

viii. attracting toner on the photoconductor toward the transfer roller so as to effect transfer of the toner image from the photoconductor to the printing media first surface.

20. A method for printing toner or the like on printing media, which comprises the steps of:

i. rotating in a first direction a drum for retaining toner;

ii. rotating a transfer roller in a second direction generally opposite to that of the first, the transfer roller being in contact with the drum at a selected transfer point for transferring a uniform layer of the toner from the drum to a first surface of the printing media, at least one end of the transfer roller being sized and configured for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the drum; and

iii. using a selected power source, applying a selected voltage between the drum and the transfer roller for attracting the toner thereto so as to effect transfer of the uniform toner layer from the drum to the printing media first surface.

21. A method for printing toner or the like on printing media, which comprises the steps of:

i. rotating in a first direction a development roller for retaining toner in a form of an image desired to be printed;

ii. rotating a transfer roller in a second direction generally opposite to that of the first, the transfer roller being in contact with the development roller at a selected transfer point for transferring a uniform layer of the toner from the development roller to a first surface of the printing media, the toner adhering to the first surface at the selected transfer point, at least one end of the transfer roller being sized and configured for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the drum.

22. An apparatus for use in a system including a photoconductor for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media, the apparatus including a transfer roller in contact with the photoconductor at a selected transfer point for transferring the toner image from the photoconductor to the first surface of the printing media, the transfer roller having at least one groove in proximity to each roller end for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the photoconductor.

23. An apparatus for use in a system including a photoconductor for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media, the apparatus including a transfer roller in contact with the photoconductor at a

selected transfer point for transferring the toner image from the photoconductor to the first surface of the printing media, the transfer roller having extendable roller ends such that, upon their extension a selected distance, at least one groove is formed in proximity to each roller end for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the photoconductor.

24. An apparatus for use in a system including a photoconductor for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media, the apparatus including a plurality of transfer rollers arranged about a rotatable carrousel, each roller being rotatably mounted to the carrousel, such that at least one of the rollers is positionable for operative engagement with the photoconductor at a selected transfer point, such engagement effecting transfer of the toner image from the photoconductor to the first surface of the printing media, each roller having an effective length different than that of the other rollers so as to enable overhanging edges of printing media having a selected width, such overhanging edges providing a setback from the paper edges and clearance from toner on the photoconductor.

25. An apparatus for use in a system including a photoconductor for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media, the apparatus including a plurality of transfer rollers arranged along a translatable carriage, each roller being rotatably mounted to the carriage, such that upon

selected translation of the carriage, at least one of the rollers is positionable for operative engagement with the photoconductor at a selected transfer point, such engagement effecting transfer of the toner image from the photoconductor to the first surface of the printing media, each roller having an effective length different than that of the other rollers so as to enable overhanging edges of printing media having a selected width, such overhanging edges providing a setback from the paper edges and clearance from toner on the photoconductor.

26. A system for electrophotographic printing, which comprises:

a photoconductive belt for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media;

a photostatic charging device for applying the photostatic charge to the photoconductive belt;

a laser for activating selected portions of the charge applied to the photoconductive belt, such portions being in the form of the image;

a development roller for transferring toner to the photoconductive belt, the toner photostatically adhering to the photoconductive belt in the form of the image;

a transfer roller in contact with the photoconductive belt at a selected transfer point for transferring the toner image from the photoconductive belt to the first surface of the printing media, at least one end of the transfer roller being sized and configured for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the photoconductive belt;

a power source for applying a selected voltage to the roller and attracting the toner thereto so as to effect transfer of the toner image from the photoconductive roller to the printing media first surface; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.

27. A system for electrophotographic printing, which comprises:

a photoconductive belt for collecting a photostatic charge in a selected form corresponding to an image to be printed, and for retaining toner in the form of the image on a first surface of printing media;

a photostatic charging device for applying the photostatic charge to the photoconductive belt;

a laser for activating selected portions of the charge applied to the photoconductive belt, such portions being in the form of the image;

a development roller for transferring toner to the photoconductive belt, the toner photostatically adhering to the photoconductive belt in the form of the image;

a transfer roller in contact with the photoconductive belt at a selected transfer point, a second surface of the printing media having a second photostatic charge for attracting the toner retained by the photoconductive belt so as to effect transfer of the toner image from the photoconductive belt to the printing media first surface, at least one end of the transfer roller being sized and configured for accommodating overhanging edges of printing media as a setback from the paper edges and for clearance from toner on the photoconductive belt; and

a feeder for transporting the printing media in tandem with the photoconductive and transfer rollers to the selected transfer point between the rollers.